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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,377	12/23/2004	George Cullen	KNN-017	4662
22832	7590	03/20/2006	EXAMINER	
KIRKPATRICK & LOCKHART NICHOLSON GRAHAM LLP STATE STREET FINANCIAL CENTER ONE LINCOLN STREET BOSTON, MA 02111-2950			TSAI, CAROL S W	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/501,377

Applicant(s)

CULLEN ET AL.

Examiner

Carol S. Tsai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-13 and 15-27 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 14 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/24/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 4 is objected to because of the following informalities:

In claim 4, line 1, "in Claim 3 4" should read - - in Claim 3 - -.

Appropriate correction is required.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a) because the blank boxes shown should be labeled as to their function, for example: elements 12 and 13 in Fig. 3, as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR

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1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7, 15, 16, 18, 20, and 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5,434,509 to Blades.

With respect to claims 1 and 15, Blades discloses an electric motor monitoring system comprising an antenna (antenna 99 shown on Fig. 8), a data sampling means (see col. 21, lines 18-20) and a data processing means (microprocessor 92 shown on Fig. 8) characterised in that the antenna provides means (detector 87 shown on Fig. 8) for detecting a radio-frequency signal generated by arcing events from a brush contact of the electric motor (see col. 18, lines 50-51 and col. 21, 18-31), and provides a diagnostic for monitoring the operation of both mechanical and electrical components of the electric motor (see col. 23, lines 27-31).

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As to claim 2, Blades also discloses a means for screening background noise so improving the overall signal to noise ratio of the electric motor monitoring system (see col. 11, lines 15-28).

As to claims 3, 4, and 27, Blades also discloses a frequency matching unit such that the frequency matching unit allows the antenna to be frequency tuned so as to optimize its operation with the electric motor (see col. 21, lines 18-42).

As to claim 4, Blades also discloses a signal conditioning unit (see col. 6, lines 6-10 and col. 11, lines 15-21).

As to claim 7, Blades also discloses an electric field probe or a magnetic field probe (see col. 26, line 54 to col. 27, line 1).

As to claims 16 and 18, Blades also discloses a means for associating the frequency of the high frequency signal to individual components of the electric motor (see col. 21, lines 17-26).

As to claim 20, Blades also discloses the application of Digital Signal Processing techniques to the sampled data so as to convert the sampled data to interpretable frequency spectra (see col. 7, lines 11-15).

As to claims 22 and 23, Blades also discloses frequency features that can be directly associated with particular diagnostics of the mechanical or electrical components of the electric motor (see col. 23, lines 27-57 and col. 24, lines 49-65).

As to claims 24-26, Blades also discloses the processing of the sampled data comprising calculating an average width of the high frequency signals, above a predetermined level, over a number of arcing events (see col. 21, lines 18-42).

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As to claim 27, Blades also discloses Blades discloses the claimed invention, except for a step of self-calibration of the diagnostic method (see col. 4, lines 12-18).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades in view of DE003140319A1 to Lindsay et al.

As noted above, as to claims 5 and 6, Blades discloses the claimed invention, except for a balanced Faraday screened loop antenna/an unbalanced Faraday screened loop antenna.

Lindsay et al. teaches a balanced Faraday screened loop antenna/an unbalanced Faraday screened loop antenna (see Abstract, lines 1-17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blades's system to include a balanced Faraday screened loop antenna/an unbalanced Faraday screened loop antenna, as taught by Lindsay et al., in order that when the alternating magnetic field amplitude is constant, the output signal of the antenna is free of resonances over a wide range, virtually independently of the frequency.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blades in view of U. S. Patent No. 5,737,026 to Lu et al.

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As noted above, Blades discloses the claimed invention, except for the detection of the high frequency signals employing a non-intrusive antenna.

Lu et al. teach the detection of the high frequency signals employing a non-intrusive antenna (see col. 12, lines 4-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blades's method to include the detection of the high frequency signals employing a non-intrusive antenna, as taught by Lu et al., in order to pick up the video signal radiated by the rear end of a television set's picture tube.

9. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades in view of U. S. Patent No. 6,701,274 to Eryurek et al.

As noted above, as to claims 19 and 21, Blades discloses the claimed invention, except for the application of Fast Fourier Transformations so as to convert the sampled data to interpretable frequency spectra.

Eryurek et al. teach the application of Fast Fourier Transformations so as to convert the sampled data to interpretable frequency spectra (see col. 3, line 50 to col. 4, line 19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blades's method to include the application of Fast Fourier Transformations so as to convert the sampled data to interpretable frequency spectra, as taught by Eryurek et al., in order to allow the frequency components to be identified.

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10. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 5,434,509 to Blades. In view of U. S. Patent No. 4,999,641 to Cordery et al.

With respect to claims 10 and 11, Blades disclose an antenna (antenna 99 shown on Fig. 8) for measuring high frequency radio frequency signals associated with arcing events from a brush contact in an electric motor (see col. 18, lines 50-51 and col. 21, 18-31).

Blades does not disclose the antenna comprising a loop and a loop screen, wherein the loop screen shields the loop from background noise thus improving the signal to noise ratio of the signal detected by the antenna.

Cordery et al. teach a loop and a loop screen, wherein the loop screen shields the loop from background noise thus improving the signal to noise ratio of the signal detected by the antenna (see col. 2, lines 9-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blades's system to include a loop and a loop screen, wherein the loop screen shields the loop from background noise thus improving the signal to noise ratio of the signal detected by the antenna, as taught by Cordery et al., in order to provide an antenna system whose magnetic and electric field responses are independently controllable.

As to claim 12, Blades also discloses a frequency matching unit such that the frequency matching unit allows the antenna to be frequency tuned so as to optimize the antenna's operation with the electric motor (see col. 21, lines 18-42).

As to claim 13, Blades also discloses a signal conditioning unit (see col. 6, lines 6-10 and col. 11, lines 15-21).



*Allowable Subject Matter*

11. Claims 8, 9, 14, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Iso et al. disclose an improved antenna tuning circuit for a long and a medium wave AM radio receiver .

Feltz et al. disclose a multiple loop antenna particularly suitable for use with an electronic article surveillance security system for detecting the presence of a resonant tag employs first and second shielded twisted loops lying in a common plane and having portions thereof interleaved with each other.

Russell et al. disclose a method and apparatus are provided for detecting an arcing fault on a power line carrying a load current.

Parker et al. disclose electric arc monitoring being effected by exploiting the discovery that electric arcs are fractal phenomena in that all essential information that signifies an "arc" is contained in each fractal subset.

Kumar et al. disclose a magnetic resonance imaging antenna, including an inner conductor, an outer shield slideably displaceable with respect to the inner conductor, and an insulator electrically insulating the inner conductor from the outer shield.

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***Contact Information***


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. W. Tsai whose telephone number is (571) 272-2224.

The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571) 272-2216. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 886-217-9197 (toll-free).

cswt  
March 14, 2006  
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CAROL S.W. TSAI  
PRIMARY EXAMINER